LOW-RATE IN-BAND DATA CHANNEL USING CELP CODEWORDS

ABSTRACT:

A codebook 58 includes a first subset of M codewords 82 and a second subset of N-M remaining codewords 84. Codewords in the first subset are used for signaling a beginning or end of an in-band stream of data. Designated frames 90 make up the stream and include both speech and data. Each codeword index defines L bits that are used to encode speech. Within the designated frames, D bits of the L bits carry data and the remaining L-D bits are used to search from a truncated number of codewords uniquely identifiable by the L-D bits. The designated frames may be a set number of consecutive frames, or the set number of frames dispersed to recur once every 1/K frames. The number of designated frames may be extended by re-transmitting a codeword from the first subset, or truncated by transmitting a stop codeword that is also within the first subset of codewords. All of the L bits are available to search the codebook in non-designated frames that do not carry data. Data rate and effective codebook size may be selected by the various codewords of the first subset.